# A New Schizomid Whip-Scorpion from California with Notes on the Others

(Uropygi : Schizomidae)

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Three whip-scorpions of genus *Trithyreus* have been reported from the United States, two from Southern California and one from Arizona. These interesting arachnids, together with the new species herein described, appear to be relics of the temperate region which has become the Sonoran Desert. Some of the known populations have been isolated in moist desert canyons or damp coastal forests long enough to show taxonomic variation even though their distance of separation may be slight. We encountered the new *Trithyreus* in Borrego Palm Canyon, about 25 miles from a well known population of *Trithyreus pentapeltis* near Palm Springs, California.

The authors are grateful to Dr. Paul H. Arnaud of the California Academy of Sciences and to the California State Park System for making the descriptive work possible.

The species of male *Trithyreus* known in the United States can be distinguished by the following key:

1. Flagellum long, subtriangular ..... *pentapeltis* (Cook, 1899)
   Flagellum club shaped ..... 2
2. Flagellum trilobed, median lobe projects dorsad ..... *wessoni* Chamberlin, 1939
   Flagellum not trilobed as above ..... 3
3. Mesal spur located apically on tibia of pedipalp, flagellum a rotundate hexagon ..... *belkini* McDonald and Hogue, 1957
   No mesal spur on tibia of pedipalp, flagellum pentagonal ..... *borregoensis*, new species

## **Trithyreus borregoensis** Briggs and Hom, new species

The following description is based on the holotype male and allotype female preserved in a solution 8% in acetic acid, 5% in glycerine, 26% in water and 61% in isopropyl alcohol.

MALE.—Body length (apex of carapace to tip of flagellum), 5.82 mm. *Color.*—Body sclerites light brown; anterior margin of carapace reddish brown; chelicerae reddish brown; legs (including coxae) reddish brown, as light as body sclerites; setae reddish brown. *Cephalothorax.*—Eye spots present but vague; carapace strongly convex, extending to a point anteromedially; mesopeltidia two narrow triangular plates pointed medially; second thoracic tergite narrowly bisected medially, posterior margin not strongly indented at suture, posterolateral

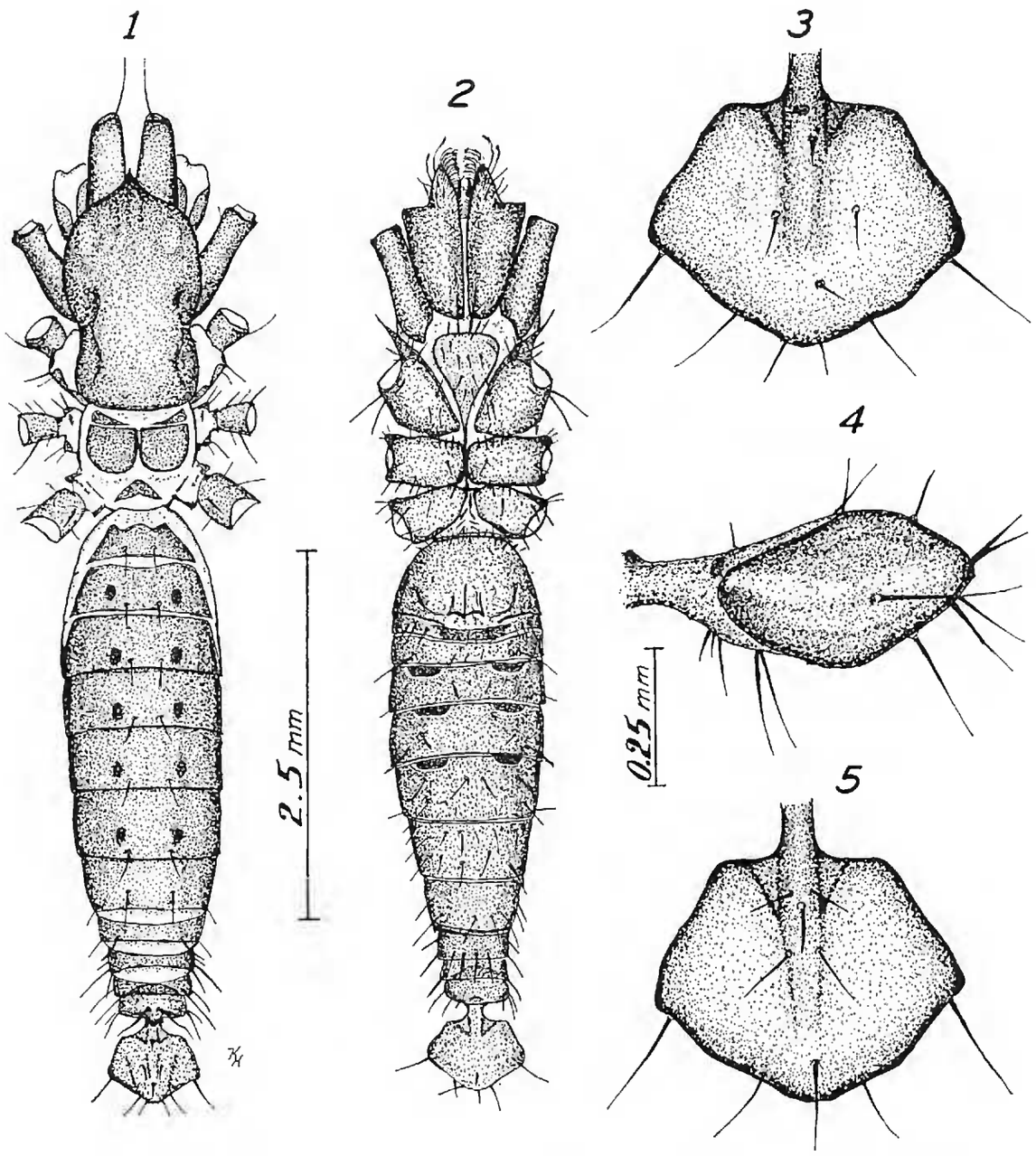


Plate I. *Trithyreus borregoensis, male.* Fig. 1, dorsum with appendages omitted; Fig. 2, venter with appendages omitted; Fig. 3, 4, and 5, dorsal, lateral and ventral views of flagellum, respectively.

margins convex; third thoracic tergite chevron shaped, bearing two setae, each preceded by two minute tubercles; sternum subtriangular with two elongate setae on anterior margin, apex of sternum between second coxae, basal angles rounded. *Chelicerae.*—Chelicerae possess both feathered and curved setae. *Pedipalps.*—Trochanter produced distally, ventral margin of process gently convex and hirsute; tibiae with two adjacent spinate setae distad, tibial spur absent; coxa with maxillary process bearing a spur and both feathered and curved setae. *Legs.*—Legs hirsute, apical hairs of tibiae normal; second coxae with distal spur; fourth femur robust with proximal portion of dorsal margin convex. Measurements listed give the linear distance between midpoints of joints.

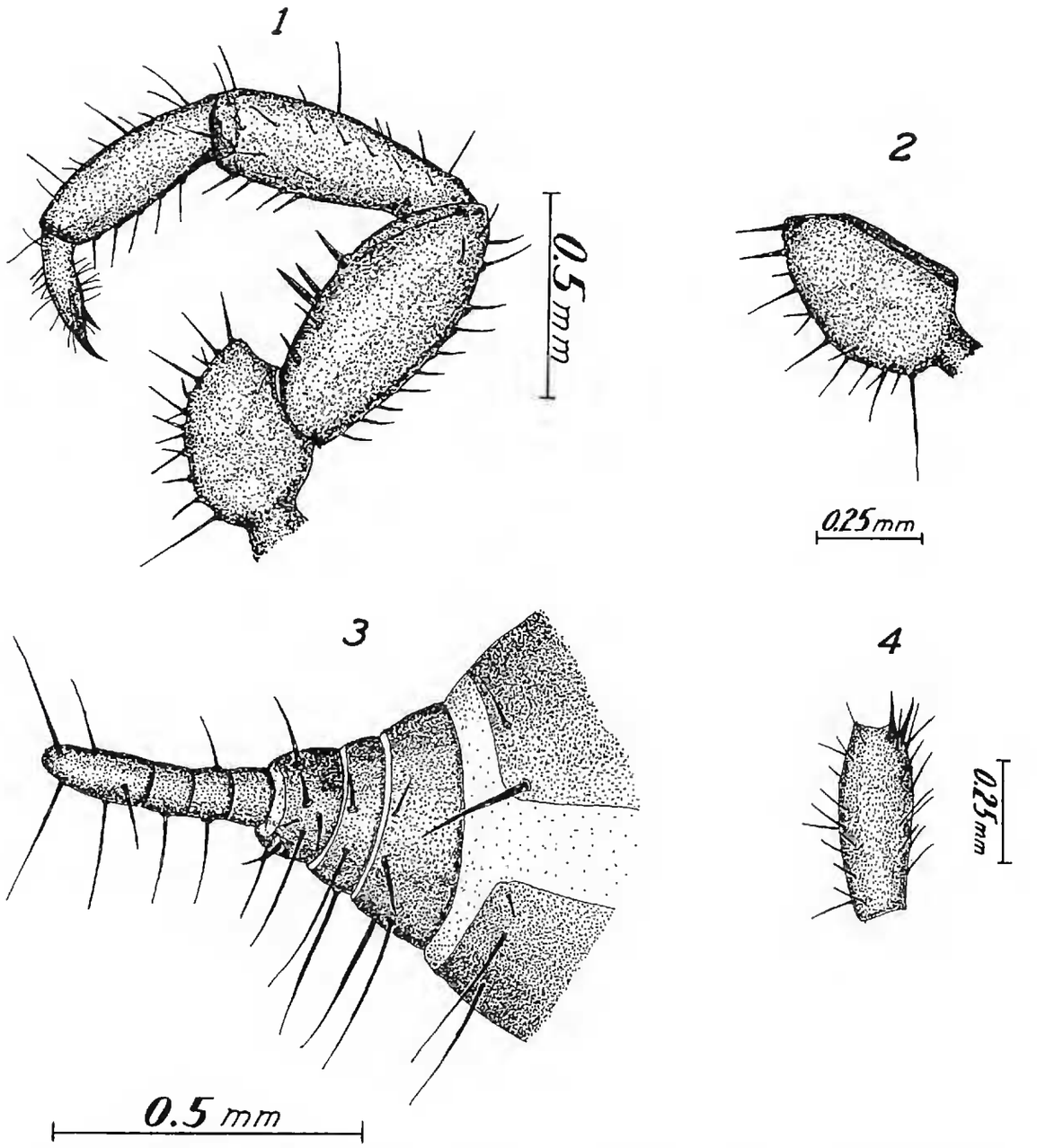


Plate II. *Trithyreus borregoensis.* Fig. 1, outer lateral view of male pedipalp; Fig. 2, outer lateral view of female pedipalpal trochanter; Fig. 3, lateral view of female flagellum; Fig. 4, inner lateral view of male pedipalpal tibia.

| | I | II | III | IV | Pedipalp |
|---|---|---|---|---|---|
| Coxa | 0.74 mm | 0.50 mm | 0.44 mm | 0.38 mm | 0.71 mm |
| Trochanter | 0.38 | 0.21 | 0.27 | 0.44 | 0.31 |
| Femur | 1.47 | 0.92 | 0.88 | 1.47 | 0.55 |
| Patella | 2.06 | 0.56 | 0.35 | 0.53 | 0.68 |
| Tibia | 1.54 | 0.74 | 0.62 | 1.15 | 0.57 |
| Basitarsus | 0.53 | 0.65 | 0.53 | 0.74 | |
| Tarsus | 0.74 | 0.44 | 0.44 | 0.44 | 0.44 |
| Total | 7.46 mm | 4.02 mm | 3.53 mm | 5.15 mm | 3.26 mm |

*Abdomen.*—Eleven tergites with a pair of mesal setae on each; eleventh tergite with a conical process having two setae on anterior margin of juncture. *Flagellum.*—Suboval in lateral view, pentagonal in dorsal view; length (including stalk): 0.55 mm, width: 0.54 mm, height: 0.29 mm, length of stalk: 0.09 mm.

FEMALE.—Body length (apex of carapace to tip of flagellum), 5.85 mm. Similar to the male in all aspects not noted as follows: Color slightly darker than male; pedipalpal trochanter also produced distally; pedipalpal tibia without distal spinate setae; flagellum typical for *Trithyreus*, 0.38 mm long; lengths of appendages given as follows:

| | I | II | III | IV | Pedipalp |
|---|---|---|---|---|---|
| Coxa | 0.74 mm | 0.53 mm | 0.38 mm | 0.44 mm | 0.76 mm |
| Trochanter | 0.44 | 0.24 | 0.29 | 0.41 | 0.29 |
| Femur | 1.47 | 1.00 | 0.88 | 1.32 | 0.59 |
| Patella | 1.85 | 0.62 | 0.50 | 0.62 | 0.59 |
| Tibia | 1.35 | 0.74 | 0.62 | 1.12 | 0.53 |
| Basitarsus | 0.41 | 0.56 | 0.56 | 0.88 | |
| Tarsus | 0.71 | 0.41 | 0.41 | 0.53 | 0.44 |
| Total | 6.97 mm | 4.10 mm | 3.64 mm | 5.32 mm | 3.20 mm |

*Holotype male; allotype female.*—UNDER ROCKS IN PALM AND SYCAMORE DEBRIS NEAR STREAM IN BORREGO PALM CANYON, ANZA-BORREGO DESERT STATE PARK, SAN DIEGO COUNTY, CALIFORNIA, 4 April 1966. One juvenile specimen sifted from leaf litter at same locality, 4 April 1966. Holotype and allotype deposited in the collection of the California Academy of Sciences. Types were collected by K. Hom and T. Briggs.

## *Trithyreus pentapeltis* (Cook)

*Hubbardia pentapeltis* Cook, 1899. Proc. Ent. Soc. Washington, 4: 249–261.
*Trithyreus pentapeltis* (Cook), Hansen and Sorensen, 1905. Arkiv. Zool., 2: 3–5.

NEW RECORDS.—San Clemente, California, 20 December 1965, sifted from toyon litter (K. Hom, T. Briggs and D. Owyang); 11.4 miles SW Lower San Juan Camp, Cleveland Nat. Forest, Orange County, California, 20 December 1965, sifted from oak litter (T. Briggs, V. Lee, D. Owyang and K. Hom).

## *Trithyreus belkini* McDonald and Hogue

*Trithyreus belkini.*—McDonald and Hogue, 1957. Amer. Mus. Novitates, No. 1834.

McDonald and Hogue (1957) described two male *Trithyreus belkini* from Topanga Canyon and noted that the trochanters of their pedipalpi resembled the broad, distally produced trochanter of the female pedipalp instead of the narrow, elongate pedipalpal trochanter of the male types from other canyons in the Santa Monica Mountains. This variation was

also noted for these additional male specimens from Topanga Canyon: 4.7 miles N Topanga Beach, Topanga Canyon, Los Angeles County, California; two males, 19 December 1965 and 7 April 1966 (T. Briggs and V. Lee).

### Food Habits

Several adult female *Trithyreus pentapeltis* were maintained in the laboratory for more than seven months in a small jar with a wet sponge on the bottom. Initially they were observed to feed on the viscera of sliced *Tenebrio molitor* larvae, but they seemed to prefer very small termites. Three specimens survived for five months without food.

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## Oregon *Diplotaxis* with Descriptions of the Larvae of Four Common Species and Notes on Biology[1]

(Coleoptera: Scarabaeidae)

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Five species of the melolonthine genus *Diplotaxis* were listed in Vaurie's 1960 monograph as occurring in Oregon. These were *Diplotaxis brevicollis* LeConte, *D. conformis* Fall, *D. obscura* LeConte, *D. subangulata* LeConte, and *D. tenebrosa* Fall. In 1962, three additional species, *D. insignis* LeConte, *D. residua* Fall, and *D. sierrae* Fall, were listed from Oregon (Vaurie, 1962) making a total of eight species now known to occur in the state.

*Diplotaxis* are rarely taken in western Oregon but are quite common in the desert areas of Oregon, east of the Cascade Mountains. *Diplotaxis brevicollis*, *D. obscura*, *D. sierrae*, and *D. subangulata* are sometimes abundant while *D. insignis* is uncommon. *D. conformis*, *D. tenebrosa* Fall, and *D. residua* Fall are rare.

*D. sierrae* is most abundant in the juniper country of Deschutes County, between Redmond and Bend, Oregon, and is locally abundant in Crook County. *D. subangulata* is quite abundant in Umatilla and Lake counties while *D. insignis* is known only from Lake County, east

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